

Chapter VIII. Outdoor Recreation Planning and Other Related Issues

Man must cease attributing his problems to his environment and learn again to exercise his will – his personal responsibility. – Albert Schweitzer

Many of the issues mentioned in Chapter II of this *Virginia Outdoors Plan* are addressed within program areas of the Department of Conservation and Recreation or other agencies as discussed in Chapter VIII. Several issues and trends mentioned during the fall 2005 public meetings and state in the 2006 Virginia Outdoors Survey fall outside typical outdoor recreation programmatic areas or are incorporated into multiple program areas. The subsections of this chapter address the issues and trends related to the *Demographic Impacts on Recreation Resources, Carrying Capacity of Recreation and Open Space Resources, Conservation and Outdoor Ethics, Crime Prevention in Public Spaces and Health and Wellness Benefits of Outdoor Recreation*. These issues are often pervasive throughout the outdoor recreation planning process and are important in determining criteria for outdoor recreation facilities. The issues and trends associated with the topics addressed in this chapter resulted in broad scale recommendations for implementation by a combination of local, state and federal agencies as well as non profits and the private sector.

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Demographic Impacts on Recreation Resources

"Everyone is kneaded out of the same dough but not baked in the same oven." -*Yiddish Proverb*

According to the University of Virginia Weldon Cooper Center for Public Service, the population of Virginia is growing faster than the nation as a whole. Between 2000 and 2005 Virginia saw an increase of 500,000 people or 7% growth. The major source of the population increase is from people moving to Virginia for employment and economic opportunities. The population growth results in more congested highways, expanded housing developments, and a greater demand for schools. A growing population also results in a heavier demand for parks and recreation services, and can place dwindling open space resources at risk.

Not only is Virginia's population growing in numbers, it is also, both as a whole and within individual localities, becoming increasingly diverse. This diversity is demonstrated through differing cultures, ages, education levels, and financial status. These varying social, cultural and economic characteristics are creating a new and different type of society with many complex issues and concerns. We acknowledge that it is important to engage all citizens in enjoying outdoor recreational resources.

Findings

- Virginia ranks in the top 10 states for immigrant resident population and top 15 states for refugee resettlement.

- Virginia's Asian population grew by two-thirds between 1990 and 2000.
- Latinos are currently the largest and fastest growing minority group in the US with an estimated 39.9 million people. Virginia's Hispanic population grew by 112% between 1990 and 2000 and then more than doubled again between 2000 and 2004. The median age of Hispanics in the US is 25.8.
- The Outdoor Industry Foundation, in its informative study entitled "The Hispanic Community and Outdoor Recreation." States the Hispanic Community is currently the largest minority population in the U.S., and is estimated to represent 1 in 5 Americans by 2012, yet is currently underrepresented in outdoor activities.
- According to NRPA's magazine, "Parks & Recreation," the Hispanic community places a high value on leisure time, with 74% reporting that they spend their leisure time mostly or exclusively with other Hispanics.
- According to the U.S. Census Bureau, in 2004, about 12.5 percent of the U.S. population and 11.2 % of Virginia's population was 65 years old or more. By 2030, almost one in five Americans will be in this age group, and Virginia expects similar growth.
- While Virginia's population is growing numerically, it is also becoming increasingly diverse. Using 2000 estimates for Virginia, Caucasians comprised 72% of the total population, African Americans comprised 20%, Asians comprised almost 4%, Hispanics comprised almost 4%, and American Indians comprised less than 1% of the total population. 2% of the population reported belonging to two or more races.
- Almost 40 percent of Americans are sedentary and more than one-third of children ages 9-12 do not engage in vigorous-intensity physical activity. Outdoor recreation linked to everyday activities encourages a healthy lifestyle and increases the number of persons involved in physical activity.
- Over the past two decades, obesity has grown to include 32.2 percent of adults, with 17.1 percent of children overweight. This epidemic is correlated in part with the lack of outdoor recreation and declines in pedestrian trips for daily activity (<http://jama.ama-assn.org/cgi/content/short/295/13/1549>, August 2006).

Recommendations

- To better serve Latino and Spanish speaking cultural groups, it is important to: Establishing trust relationships; Hire bilingual staff; Advertise in the Spanish media; Host Latino-themed events; Create programs with the community, not for them. Invite, involve and include Hispanics in all aspects of service delivery. Similar strategies are effective for other cultural groups.

- Federal, state and local agencies should be more aggressive in their efforts to encourage multicultural and ethnic diversity in the professions of outdoor recreation and natural resource management.
- Due to the increase in cultural and ethnic diversity in the Commonwealth, consideration should be given to making signs, literature and audio displays available in other languages.
- State and regional agencies should place a high priority on providing recreation opportunities to the Commonwealth's urban population in "close-to home" settings to allow for better access and to avoid overuse of facilities planned for rural populations.
- Public and private sector providers of water-related recreation opportunities should recognize the affect an increasing population and disposable income will have on existing support facilities for swimming, boating and beach use. There will be a strong demand for more of these facilities.

General Population Growth

As of July 1, 2005, The Weldon Cooper Center for Public Service estimated Virginia's population to be 7,567,500, which ranks 12th in population nationally.

From 2000 to 2005, sixty percent of the Commonwealth's total population growth occurred in Northern Virginia metro area. This trend continues despite traffic congestion and crowding. The explanation for this continued growth is attributed to employment opportunities and Northern Virginia's close proximity to the Nation's Capital. The fastest growing Planning Districts in Virginia from April 1, 2000 to July 1, 2005 are: George Washington (formerly RADCO), 23.2%; Rappahannock-Rapidan, 14.2%; Northern Virginia, 12.6%; and Northern Shenandoah Valley, 10.3%.

The fastest growing localities in Virginia from April 1, 2000 to July 1, 2005 are: Loudoun County, 48.8%; City of Manassas Park, 27.2%; Stafford County, 26.9%; Prince William County, 26.5%; Spotsylvania; 26.1%; Fluvanna, 24.4%; City of Suffolk, 21%; and Culpeper County, 20.1%.

Localities with the greatest numerical growth from April 1, 2000 to July 1, 2005 are: Loudoun, 82,700; Prince William, 74,500; Fairfax County, 52,400; Chesterfield County, 26,600; Stafford County, 24,900; Spotsylvania County, 23,600; and Henrico County, 21,000.

While as a whole Virginia's population is growing, there are localities that are losing population. Rural Virginia, such as in the southwestern area of the state, is losing population as the mining and farming opportunities decrease. Large farms are being subdivided into smaller farmettes and vacation estates. Similarly, other cropland is being

converted to pasturelands and pasturelands are being converted to forestlands. However, as environmental awareness increases, there are tremendous opportunities for resource-based ecotourism and rural resource-based recreation opportunities. Three Virginia Planning Districts lost population from April 1, 2000 to July 1, 2005, including: Cumberland Plateau, -1.8%; West Piedmont, -1.1% and Southside, -0.6%.

Aging of Virginia's Population

One of the more apparent issues is the “aging” of Virginia. Based on 2000 estimates by the Census Bureau, children younger than age 18 still comprise more than 24% of the population, while older adults, ages 65 and older, comprise slightly more than 11%. By 2030, 20% of the U.S. population will be 65 years or older, and while older adults currently use a significant proportion of community, private and institutional recreation and park services, the number of such consumers is likely to skyrocket during the next 25 years. Older adults are living longer, healthier lives; however, an aging population has differing recreational needs and desires than a younger population.

As more adults retire and have more leisure time, there is expected to be an increased demand for “local” travel and tourist destinations. Destinations such as botanical gardens, museums and historical sites close enough to be day trips rather than extended journeys will become increasingly popular. Enhancing the quality of a community through the availability of open space and recreational resources will become a pressing issue for many localities in the very near future. Many individuals have more disposable income and leisure time than they previously did. This has led to an increase in the ownership rates of recreational vehicles, including motor homes, camping trailers and boats. Recreational facilities now face increased demand for amenities that accommodate the use of these types of vehicles.

As our society becomes more aware of the physical benefits of exercise, especially among older adults, there is great potential for an increased need for walking/hiking, fitness and nature trails. Trends in the 2006 Virginia Outdoors Survey show 72 percent of households participating in walking for pleasure. Of those responding to the survey, approximately 15% were over the age of 65. This substantiates the trend in Virginia for older adults articulating the need for walking opportunities close to home.

Cultural Diversity

While over 72% of Virginians were listed as white in the 2000 Census, the racial and ethnic composition of Virginia is changing dramatically. Today, Hispanic and Asian minorities are among the fastest growing population groups in Virginia and account for a large portion of its population growth. Between 1990 and 2000, for example, the number of Hispanics in Virginia increased 112%. These demographic trends have major implications for the way recreation and natural resource agencies (e.g., Local Parks and Recreation Departments, Virginia State Parks, the U.S. Forest Service, and the National Park Service) do business. These population and demographic changes require increased awareness of the needs and expectations differing cultures place on recreational facilities.

Virginia is at a crossroads with regards to diversity and how recreation and natural resource agencies will respond to changes in the ethnic and racial composition of the state. This chapter recommends statewide and national educational efforts to promote outdoor recreation among minorities and promote diversity in Virginia recreation and natural resource agencies. Park managers must determine what practices best work in serving racial and ethnic minorities in recreation, natural, and cultural resource settings, and attracting multicultural and diverse employees.

USDA Forest Service attempts to address the diverse cultural backgrounds and values of its citizens in their programs and facilities. According to the USFS, with respect to the use of urban forests, "user expectations are often based upon cultural experience gained in other countries. The user population is extremely diverse...[and] different cultures have different resource ethics, which often conflict with Forest Service resource practices" (www.fs.fed.us). While the statements are directed strictly to urban forests, they hold true for any natural area facility located near a diverse population. Cultural differences also affect the use of a park or any type of open space. Some cultures are accustomed to smaller open spaces than Americans. Americans hold dear the wide-open landscape provided by many of our parks and open spaces. When designing open spaces and parks, planners and landscape architects must be aware of the populations that will utilize the facilities. Even such rudimentary items as location of benches in proximity to each other and the width of paths and walkways need to be addressed.

Few natural resource and outdoor recreation management agencies enjoy a multicultural and ethnically diverse staff. Aggressive efforts need to be made to interest young minorities in a career in these fields. A successful program may need to start at the elementary school age. Incentives may need to be used to attract minorities to the study of the natural resource sciences and outdoor recreation in college.

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The Outdoor Industry Foundation <http://www.outdoorindustryfoundation.org> reports that Hispanic youths are the fastest growing segment of the Hispanic population and the most promising for engaging in outdoor recreation. "Today's youth population is diverse by nature - more multicultural than their parents. Reaching and engaging Hispanic youth is paramount to cultivating the next generation of outdoor enthusiasts," noted Barnes. Fully 1/3 of Hispanics is under the age of 18 and suffers from obesity at much higher rates than the rest of the population. It is important for the health of our nation, and the health of our industry to introduce the active lifestyle to the Hispanic Community, particularly young Hispanics.

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Employment Trends

The total hours worked by all family members in a week rose 11 percent between 1975 and 2002 according to a 2004 report by the Economic Policy Institute in Washington, DC. These hours have increased as more women have entered the workforce, creating dual-income families. The increase in family work hours affects the type of leisure

activities and the quality of family life in spite of the rise in family income (http://www.epinet.org/content.cfm/webfeatures_snapshots_07072004).

As employees work longer weeks, there is a trend for shorter vacations involving outdoor recreation closer to home. These leisure times are most often incorporated into busy lifestyles as extended weekends and on holidays. This trend impacts the need for a variety of outdoor recreation opportunities near populations. Also, the use of close to home facilities may impact carrying capacity of existing sites.

Knowledge Management

As the baby boom generation reaches retirement age within the next five years, mature workers will leave with valuable institutional knowledge and job skills. According to the Computing Technology Industry Association, there could be as many as 21 million vacant jobs but only 17 million workers to fill these posts by 2012. Although this so-called “Baby Boomer Bomb” will hurt many companies, it will be acutely felt in parks and recreation departments that have struggled to meet operational capacity and fulfill unfunded mandates in the face of severe cutbacks. Information mapping and data retrieval, capture, and distribution have often been sacrificed to complete other pressing tasks, leaving file rooms in disarray and databases unpopulated.

Knowledge management, which captures, organizes and stores the knowledge and experiences of employees and makes this information available to others in the organization, will become increasingly important as the workforce shrinks. It is important for agencies to plan now to maintain ties with older workers and to set up mentoring programs with new talent. Good management will value intangible assets like life experience and develop a knowledge development plan to secure the learning experiences and work products of employees before a crisis unfolds.

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RELATED RESOURCE AGENCIES

Weldon Cooper Center for Public Service

2400 Old Ivy Road
Mailing Address
P.O. Box 400206
Charlottesville, VA 22904
Voice: (434) 982-5522
FAX: (434) 982-5524
coopercenter@virginia.edu

Institute on Aging
University of Virginia
1023 Millmont Street
PO BOX 400870
Charlottesville, VA 22903
UVaging@virginia.edu
434-243-5695
Fax: 434-243-3558

American Association of Retired Persons
601 E Street NW
Washington, DC 20049
1-888-687-2277

Outdoor Industry Foundation, <http://www.outdoorindustry.org>,
info@outdoorindustry.org 303.444.3353

U.S. Census Bureau, pop@census.gov, www.census.gov

American Fact finder:
<http://factfinder.census.gov/servlet/BasicFactsServlet/>

U.S. Bureau of the Census, homepage
<http://www.census.gov/>

2000 Census Lookup
<http://www.census.gov/main/www/lookupdown.html/>

University of Virginia
<http://fisher.lib.virginia.edu/census/>
Historical Census Data from 1790-1960

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Carrying Capacity of Recreation and Open Space Resources

Too often the number of participants has been our only criteria for evaluation. We count numbers—and after a while only numbers count. –CLAYNE JENSEN, Outdoor Recreation in America, 1985

As increasing farmland and forestland is developed and as Virginia's population grows, it becomes essential to ensure that recreational and natural areas are managed to handle increased demand of users and prevent the degradation of these resources that provide visitors optimal outdoor experiences. The sustainability of a park or natural area with regard to certain types of recreational use is measured by carrying capacity. Carrying

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capacity is defined as the population that can be supported indefinitely by its supporting systems.

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Findings

- Virginia's population is increasing. The amount of recreation land available for public use is not keeping pace with the population growth. Competition for available lands and waters is increasing.
- Many users of parks and open space resources are finding that enjoyment of their activity conflicts with other user groups.
- Inadequate funding for staff, development of facilities and maintenance hinders the ability of recreation and open space managers to preserve the character of natural resources and to meet visitor's expectations.
- When assessing the carrying capacity of recreation and open space resources, there are three factors to consider: natural resource factors, social factors and managerial factors.
- Carrying capacities cannot be established until objective, quantifiable management objectives have been written.
- Important differences related to appropriate levels of use and impact exist between the perceptions, expectations and opinions of managers and recreation users. Public input from user groups is needed to balance visitor expectations and site sustainability.

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Recommendations

- Federal, state and local agencies should ensure that adequate supplies of recreation and open space are provided to meet demand and that those areas and facilities are adequately staffed, funded, and maintained. A dedicated funding source for the acquisition, management and maintenance of recreation areas and facilities should be considered a priority.
- Park, recreation and open space planners and managers need continuing career education programs to enhance management skills that include techniques for identifying and resolving resource degradation effects associated with increased recreational use.

- Public input needs to be formally and systematically incorporated into the process of establishing management objectives to guide carrying capacity decisions based on user expectations and resource sustainability.
- Management objectives for all recreation and natural areas should be established and an assessment tool such as the U. S. Forest Service's Limits of Acceptable Change (LAC) or the National Park Service's Visitor Experience and Resource Protection (VERP) process employed to determine the carrying capacity for the lands they manage.
- Activity user groups along with local parks and recreation departments should continue to educate outdoor recreation enthusiasts to be cognizant of the impacts they have on others to minimize user conflicts and increase economic and natural resource sustainability.

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Background of Carrying Capacity

The concept of carrying capacity was first applied to wildlife and ecological areas. In this context, carrying capacity is the maximum number of individuals (plant or animal) that an area can support without degradation of the resources. This chapter concentrates on the human influences to outdoor recreation lands and ultimate carrying capacity of these lands. While the habitat needs and ecological components are not extensively addressed in this section, it is an inherent concern in developing guidelines for carrying capacity. Consideration of carrying capacity in the management of recreation areas can be traced back to the mid-1930s. During the '60s and '70s the overuse of recreation areas began to draw attention and it became more common to evaluate carrying capacity for recreation areas.

Carrying capacity plays an important role in the development, management and maintenance of sustainable communities. In the book *The Living Landscape; An Ecological Approach to Landscape Planning* by Frederick Steiner, the author describes a concept developed by the Tahoe Regional Planning Agency called "environmental threshold." It is defined as "an environmental standard necessary to maintain a significant scenic, recreational, educational, scientific, or natural value of the region or to maintain public health and safety within the region." Thomas Dickert and Andrea Tuttle of the University of California, Berkeley advocate this concept as a means of controlling cumulative environmental impacts. They describe cumulative impacts as "...those that result from the interactions of many incremental activities, each of which may have an insignificant effect when viewed alone, but which become cumulatively significant when seen in the aggregate." They suggest an alternative approach whereby the "rate or total amount of development is managed to stay below pre-stated threshold levels, and halted when such thresholds are reached."

The Limits of Acceptable Change (LAC) planning system was developed by George H. Stankey et al, in conjunction with the Recreation Opportunity Spectrum in 1985 for the U.S. Department of Agriculture's Forest Service (Appendix A: Guidelines for Outdoor Recreation Planning). Stankey's research discovered that while carrying capacity was fundamentally a quantitative term, many of the problems of recreational use were not so much an issue of the numbers of participants, but their behavior. This led Stankey to focus not on the question of "How many is too many?" but to ask instead, "What resource and social conditions are appropriate (or acceptable), and how do we attain those conditions?" Thus, Limits of Acceptable Change as a planning system became a way for managers to reconcile the complex issues of visitor experiences with the problems of the social and biophysical impacts of these users.

Practically all recreation, open space and protected natural resource management agencies in the U.S. have recognized that developing a systematic approach to resource management is the most effective way to identify and resolve preservation/restoration issues and ensure that the characteristics for which these areas were established are conserved. The challenge that exists for resource managers is to clearly understand the principles and concepts underlying the LAC planning system and to design and implement management plans that are specific to their resources.

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For more in-depth information on the Limits of Acceptable Change (LAC) planning system and the Recreation Opportunity Spectrum (ROS), both developed by the USDA Forest Service, please contact the Forest Service at the address listed in Appendix J: Organizational References on page ____.

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Factors Considered for Limits of Acceptable Change (LAC) Planning System

In order to devise management objectives and an associated plan for a recreation area, it is essential to consider these factors as they relate specifically to the affected area.

Natural resource factors – The physical and biological characteristics of natural resources influence the degree of change in the environment resulting from recreational use. Although recreational use inevitably causes change in the environment, some resource bases are inherently more fragile than others.

Social factors – The needs and wants of people are important in determining appropriate uses of natural resources. User's perceptions and opinions of what types and level of use are appropriate are an essential element of carrying capacity prescriptions (See Appendix A).

Managerial factors – Legal directives and agency missions often play major roles in determining appropriate resource, social and management conditions. These factors

prescribe what conditions should be maintained and what actions are needed to achieve those conditions.

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Implementing Carrying Capacity Measures

To accommodate the different types of users, a different set of management objectives may be necessary for individual sub-sections of a larger resource base. Management objectives address how much change is acceptable by deciding what types of recreation experiences a particular recreation area should provide, the feel of naturalness, the kind of experience offered and the intensity of management practices.

One common misconception of carrying capacity is that controlling or limiting numbers of users is the key to limiting impact. Limiting visitors may not always provide the best resolution to carrying capacity. Problems of choosing appropriate allocation and rationing techniques for visitation often alienates users. An alternative to limiting numbers of users is the potential for change in visitor behavior through education and regulations. Education and outreach initiatives move the user from a customer to a steward of the resources and encourages users to take ownership for park and natural resource preservation and protection.

When resource modification is insufficient or inappropriate in addressing carrying capacity, a resource manager may implement management practices that increase the carrying capacity of the resources to support more use, but to limit recreational participation in sensitive areas of the site. These management practices help to maintain user expectations for their recreation experience (i.e., a backcountry or wilderness experience) and meet user anticipation for social interaction. An effective communication program between managers and visitors ensures carrying capacity needs and safety standards are met at outdoor recreation sites.

Increasing Carrying Capacity Through Site Changes

Resource managers may increase carrying capacity of a recreation area without limiting visitor access by hardening sites to protect resources. Defining the use area with a border such as railroad ties, wood or railings and then hardening the impact area with gravel, crushed stone, sod, wood chips or asphalt protects the site from overuse. This method directs user activities within a defined area and limits site impacts while protecting natural resources. Other examples of site hardening are cordoned off, hardened campsites, recreational vehicle (RV) camping sites, and paved walking paths. Prohibiting campfires also reduces human impacts and risks at park sites. The construction of fire rings and limiting fires to designated areas is often effective in managing campfire impacts.

It is important to note that though hardening of sites can increase carrying capacity, it may also potentially change the recreation experience for the user by modifying the natural setting. For this reason, it is imperative that site hardening and resource modification be designed and implemented to keep the setting as natural as possible.

Limiting Recreational Use

Limitations on the size and quantity of camping parties in any one area at any given time allow managers to control the numbers of participants in an area and reduce recreational impacts. When the pre-determined limit on individuals camping has been reached, participants may be directed to another area. Reservation systems that issue permits for specific dates and use areas are most effective for ensuring high quality backcountry experiences. These tools give managers the ability to control how many visitors are present in an area and maintain an appropriate level of social interaction between participants. A registration system also maintains a log of where visitors are located in the event of an emergency. Limiting recreational use is more appropriate to backcountry recreation areas where the solitude and lack of social interaction are part of the mystique of the experience.

Site Monitoring for Carrying Capacity

After establishing objectives for the management of an area, it is essential to monitor progress of the management plan. Monitoring is the periodic and systematic evaluation of biophysical and social conditions. Monitoring allows managers to maintain a formal record of natural resource and social conditions and track changes over time. The effectiveness of management actions may be evaluated and implemented in management practices through a monitoring program.

Funding for Limits of Acceptable Change Model

Funding is an important aspect of the Limits of Acceptable Change model that cannot be overlooked. Implementation of LAC practices, as with other planning systems, requires funding. Initially, funding may require directing of monies to increase protection of important resources essential for long-term sustainability. An active public involvement process may actually enhance implementation of management proposals aimed at carrying capacity as well as increase the support for funding.

Conservation and Outdoor Ethics

....we're at a critical stage in the world. We have reached the point where we need to think about what kind of environmental future we're going to have. I believe we can live in harmony with our environment; we don't have to go out and pave every square inch. But we need a new ethic for living in our world. That's why I do what I do. –CHUCK FLINK, President, Greenways Inc., 1988

Conservation and outdoor ethics are essential for protecting water quality, maintaining plant and animal habitat, reducing the causes of global warming and protecting Virginia's outdoors. Adequate outdoor recreation and conservation lands must be maintained to ensure long-term health of the environment and Virginia's citizens must be educated to protect these resources. Local, regional and state initiated education for conservation and outdoor ethics is needed as populations grow and lands continue to develop. The growth of a community-driven conservation ethic will strengthen the success of green infrastructure as a planning model. The difference between success and failure for outdoor resources will be made at the community and individual level where responsible actions of many people have the opportunity to change the complexion of the Commonwealth's outdoors for future generations.

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Findings

- If citizens cannot enjoy and recreate outdoors, they will not have the desire to protect lands for future generations; therefore public access to outdoor recreation helps achieve conservation.
- As the social and economic fabric of Virginia has changed over time so, too, has the public's attitude toward land conservation and stewardship.
- Multimedia campaigns are effective in conveying the message for conservation and outdoor ethics and stewardship.
- Stewardship Virginia is a statewide campaign to encourage Virginians to engage in the conservation and care of the state's natural resources.
- Virginia Naturally enhances the depth and breath of conservation ethics through environmental education.
- Virginia's Adopt-A-Stream, Adopt-A-Highway and other clean up programs focus on citizens involved in litter control along rivers, streams, road corridors and adjacent lands.

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Recommendations

- Local, state and federal government should provide the appropriate number and venue of opportunities for the Commonwealth's population to enjoy and access outdoor environments.
- State and local DCR and local parks and recreation departments should provide opportunities to learn responsible use of public lands through the teaching of *Leave No Trace* and *Tread Lightly!* Skills.
- DCR and other natural resource agencies should provide leadership and example in operations and maintenance on behalf of conservation and outdoor ethics.
- All the state natural resource agencies should partner with Virginia Naturally (community partners) for a multimedia campaign to improve environmental literacy and conservation ethics using simple shared messages, clear and achievable calls to action and measurable common goals. This campaign should highlight the need for conservation and green infrastructure planning and encourage economic and natural resource sustainability.
- Work with partner states to implement the goals identified in the Chesapeake Bay Program's Chesapeake 2000 Agreement related to outdoor education, stewardship and conservation ethics.

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Background for Conservation and Outdoor Ethics

Ethics is the discipline of dealing with right and wrong - a theory or system of moral values that govern the conduct of an individual or group. Conservation includes the careful management and stewardship of natural resources to prevent exploitation beyond capacity, degradation and waste. By the late 1890s the term ecology meant the study of how organisms interacted with each other and with their total environment. From its inception, ecology encompassed whole community systems, which allowed the discipline to be a fertile ground for environmental ethics. Aldo Leopold, one of the pioneers in American wildlife ecology, was among the first to see the connection clearly. "All ethics," he wrote in 1949, "rest upon a single premise: that the individual is a member of a community of interdependent parts."

In 1948, when Aldo Leopold published *A Sand County Almanac and Sketches Here and There*, America had been settled. The overwhelming task of carving a homestead out of the wilderness had been accomplished and, for the most part, the country was stable and prosperous. Americans had time to pursue interests other than the source of their next meal. The Second World War had ended and the exodus of people from the countryside to the industrialized cities was in full stride. Advances in agriculture meant that fewer farmers were needed to feed the American population. Workweeks were shortened and leisure time was increasingly spent on outdoor recreation activities that once were part of the process of putting food on the table. Hunting and fishing became sports for people of leisure. Hiking and camping, once a means of gathering game became popular diversions.

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Government agencies acquired lands for parks and public forests within which they developed facilities to accommodate these outdoor activities. Public hunting lands were acquired and modern game management activities ensured adequate game populations. People began to appreciate the land for its intrinsic values, not just its economic value.

Leopold's book was a call to action - the beginning of what was to become the conservation movement. Since its publication, many voices have joined the call for sound management of the country's rich heritage of natural resources. A conservation ethic has evolved that is generally accepted as the path to a sustainable future. Communicating the ethic and gaining understanding and commitment from local and state elected leaders remains a challenge.

Importance of Conservation and Outdoor Ethics

As more people spend their lives in metropolitan areas, they may lose connection with the land. There is evidence, especially in younger generations and children who have grown up with technology and spent less time outdoors that the understanding of natural processes and affinity for the land is diminished. This weakening of the traditional attachment to the natural world has implications in how people view natural areas and behave in natural settings.

Even with a decreased daily link to the landscape and outdoors, Virginians desire and concern for outdoor recreation and conservation remains strong. The 2006 *Virginia Outdoors Survey* found that 92 percent of Virginians felt that it was important for them to have access to outdoor recreation opportunities. Ninety-four percent felt that it was important to protect open space resources. Of those responding to this survey, seventy-eight percent felt that the state should spend public funds to acquire land to prevent the loss of exceptional natural areas. Obviously, in Virginia, the problem of a populace detached from a kinship with the land has not reached acute levels.

Role of Nonprofit Organizations in Conservation and Outdoor Ethics

Continuing efforts of local and regional conservation organizations to incorporate conservation ethics, and an understanding of individual responsibility for stewardship and conservation is important. The efforts of organizations such as the National Geographic Society, the Wilderness Society, The Conservation Fund, The Nature Conservancy, Audubon, Ducks Unlimited, Isaak Walton League of America, National Wildlife Federation and others have been successful in bringing the need for conservation to the public's attention. Public school education programs such as Project WET, Project WILD, Project Learning Tree, *Your Backyard Classroom* and others relay the conservation message to children who then share it with their families. In addition, watershed initiatives sponsored by a variety of nonprofit organizations and soil and water districts are leading to greater awareness and improved water quality (see *Virginia Watersheds* a subsection of Chapter VII).

Statewide Conservation and Stewardship Campaigns

Adopt-A-Stream, Habitat at Home, Adopt-A-Highway, river cleanups and riparian buffer plantings – these are among the myriad of stewardship opportunities sponsored by

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Virginia communities, agencies and organizations. While many Virginians embrace these public efforts to improve stewardship of our natural, cultural, historic, and scenic resources, many more have not been engaged and non-point source pollution remains a serious problem. Litter dots the landscape, excess fertilizers run into our streams and rivers, and improperly maintained vehicles pollute our air and roadways. Coordinated multi-media information and education campaigns that carry simple conservation messages and calls to action can increase participation in stewardship events and activities. But where these campaigns raise awareness and do not change behavior, social marketing techniques should be considered. See the Chesapeake Club example in the Environmental and Land Stewardship Subsection of Chapter VII.

User Conflict in Outdoor Recreation

User conflict is another component of conservation ethics that affects outdoor recreation. Too often, people participate in outdoor activities with no thought given to others who may be using the same resource at the same time. User conflicts have increased exponentially as different user groups vie for limited resources. User conflicts are more acute in urban areas where large populations compete for use of facilities and the per capita use of facilities is greatest.

Trails once built for hikers are now carrying mountain bicyclists and equestrians. On the other hand, the speed of the bicycles offends hikers and scares horses. The impact of horses detracts from the enjoyment of hikers. On waterways, the problem has become acute in areas where personal watercraft, also known as jet skis, have a significant impact on human powered watercraft such as canoes and kayaks. Fishermen also feel impacted by increased watercraft and fewer access sites per capita in urban areas for fishing and boating.

Teaching user groups how to share limited outdoor recreation areas with competing user groups in a responsible manner is a major challenge for resource managers. Efforts by responsible user groups educate their memberships about user conflicts; however, many users fall outside of their communication channels. Using the outdoors responsibly without impact helps to sustain outdoor recreation sites and enables enjoyment by multiple users. The importance of maintaining the appropriate numbers and types of outdoor recreation facilities with regard to populations throughout the Commonwealth will assist management in minimizing outdoor recreation user conflicts.

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Outdoor Ethics Programs

Leave No Trace (www.lnt.org) - The Leave No Trace Center for Outdoor Ethics is a national non-profit organization dedicated to promoting and inspiring responsible outdoor recreation through education, research and partnerships. Leave No Trace builds awareness, appreciation and respect for our wild lands.

The underlying ethics and seven principles of Leave No Trace include:

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces

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- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

Tread Lightly! (www.treadlightly.org) - This nonprofit organization offers educational materials, training courses, restoration opportunities, communication pieces and a variety of tools to help arm recreationists with an outdoor ethic. *Tread Lightly!* offers specific ways to minimize your impact when four-wheeling, off-highway motorcycling, mountain biking, geocaching, riding an ATV, hunting with an ATV, snowmobiling, camping, fishing, boating, hunting, horseback riding, backcountry skiing, hiking, sand duning and using a personal watercraft.

Virginia State Parks (<http://www.dcr.virginia.gov/parks/kidfacts.htm>) and **The Camping Club** (thecampingclub.com/zzcheckl/etiquette.html) address potential user conflict by promoting etiquette guidelines and ways to be prepared for camping.

The Isaak Walton League of America (<http://www.iwla.org/index.php?id=13>) has taught sportsmanship to successive generations of hunters and fishermen. Their organization motto is, “*We must leave our woods, waters and wildlife better than we found them, and we must dedicate ourselves to inspiring others to do the same.*” The Izaak Walton League of America inspires outdoor enthusiasts to accept personal responsibility for protecting outdoor resources. The organization offers an outdoor ethics program on the education and support of ethical behaviors in the outdoors.

International Mountain Biking Association (<http://www.imba.com>) educates users and resource managers with regard to stewardship of the lands and in ways to minimize user conflicts by proper facility design, education and outreach to users.

American Whitewater (<http://www.americanwhitewater.org/content/Stewardship/>) has a mission, “to conserve and restore America’s whitewater resources and to enhance opportunities to enjoy them safely”.

Virginia Horse Council (<http://www.virginiahorsecouncil.org/TrailsInformation.htm>) provides user education about sharing trails with other users.

Virginia Off Highway Vehicle Coalition (<http://www.vohvc.org/>) has a mission “to establish and improve Off Highway Vehicle (OHV) opportunities in Virginia through education, responsible land use, environmental sustainability and the promotion of safe, friendly, family, oriented recreation”.

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Crime Prevention in Public Spaces

Crime and the fear of crime do not flourish in an environment of high energy and healthy interaction among law-abiding community members—the trail may be one of the safest places in the city. —Chief of Police in South Burlington, Vermont, 1997

Living and recreating in a safe place is an essential quality of life factor. *Virginia Code* § 15.2-2283 recognizes this in the purpose of zoning ordinances which states “zoning ordinances are for the general purpose of promoting health, safety or general welfare of the public... and to these ends such ordinances shall be designed to give reasonable consideration.... to provide for adequate light and convenience of access and safety from fire, flood, crime and other dangers.” In addition to promoting the reduction of crime through zoning, all public space planning, design and management should be implemented to reduce or eliminate the opportunity for and incidents of crime as well as ameliorate citizen fears. This can be accomplished through the application of Crime Prevention Through Environmental Design (CPTED) techniques and principles.

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Findings

- No place is completely crime free; the challenge is to understand the real dangers versus the perceived dangers.
- Trails and managed open spaces are safe neighbors.
- Careful design & site management is critical to insuring safe environments and does not have to cost a lot.
- Fully integrated security measures can create a positive experience in all landscapes. Program management is effective in creating physical security in public spaces.

[End Box]

[Box Begin]

Recommendations

- Local communities and property owners should promote well-designed public spaces that reduce crime in the area around the site.
- Property owners should promote management techniques that promote safe environments.
- Project Managers should repair broken or vandalized equipment or facilities immediately to minimize the impression of lack of interest or authority.
- Communities and land managers should put forth a united front against crime, by working with the community, law enforcement agencies and the courts.
- Park Managers should establish, publish and enforce park rules and regulations to maximize public enjoyment and safety.
- DCR, in conjunction with the Virginia Crime Prevention Association and the Virginia Safer By Design Committee should provide education and technical assistance to communities on safe sites, including staff training and development of a technical document to be used by park and land management staff.

[End Box]

Importance of Crime Prevention in Public Spaces

The application of Crime Prevention Through Environmental Design (CPTED) principles effectively implements design solutions to prevent crime and positively effects the perception of safety in public spaces. Using CPTED in public spaces is not new. It has been practiced since the early 1970's; however, its application to park and natural settings is more recent. By implementing CPTED principles for crime prevention, limited public funds may be maximized.

Within the context of the outdoor environment, safe use of the resources and safety within the designed and natural environments is essential. Many social aspects of outdoor recreation are influenced by a person's sense of safety and security. For many there is a great concern about the safety of public spaces. A community's high quality of life is dependent upon reducing the frequency, severity and fear of crime by making public spaces more comfortable and appealing.

Providers and users of outdoor recreation need to be keenly aware of ways to integrate safety and security into the design of outdoor facilities and programming of outdoor activities. Education about safety and security within the out-of-doors influences specific outdoor and ultimately the overall quality of life within the community. Ultimately, individuals are responsible for their own safety and crime cannot be eliminated; however, through the application of CPTED and other techniques safer environments can be designed and result in a reduced in frequency and severity of crime.

[Case Study begin]

Local citizens and organizations with vision and determination have accomplished the transformation of abandoned, crime-ridden sites into relaxing and outdoor spaces, such as community parks and gardens. The use of CPTED principles and community driven support are key to these successes. [Add photo of Community Garden](#)

Case study end]

Principles of CPTED

Design, maintenance, program scheduling & community support contribute to safe parks & open spaces. Though design alone will not ensure sites are completely crime free, it can provide a balance between, perceived threats and maintaining a peaceful, natural environment. Applying CPTED principles early in the design process is cost effective at reducing the opportunity for and fear of crime.

The three design principles of CPTED are physical access, visual access and defined ownership. These core principles along with the other two management principles, programming and maintenance, work together to form vibrant and safe environments. Principle applications of CPTED need to be focused on places with high use at access points to pathways, parking areas, trailheads, restrooms, playgrounds and courts. Isolated

or problematic areas receiving inappropriate use may also be improved by applying CPTED principles.

[Subsection of Principles of CPTED

CPTED Design Principle 1: Physical Access

Part of access control is ‘wayfinding’. This is the ability to know where you are and where you want to go. A critical aspect is to be able to move easily through a space and feel safe. For safety, users of public spaces need to have clear signage indicating location maps, nearby places of interest, contact and support information.

Access must be obvious, especially between high-use areas, like parking and restrooms. Clearly delineated walks and trails protect the environment, as well as provide a sense of direction and security. Direct access needs to be limited in dangerous, problem, or environmentally sensitive areas. Cut-throughs should be closed off or opened up and hardened to create a more safe and sustainable environment.

[Subsection of Principles of CPTED

CPTED Design Principle 2: Visual Access

Visual access provides a secure sense of place for users and refers to the ability to see into, out of and through a site, or portion of a site. Though maximum visibility is often sought, especially in urban situations, in more rural and natural settings privacy may be desirable. The determination for desired visibility is based on an assessment of risk and users’ expectations as well as overall public safety.

Strategically placed viewing opportunities, which maintain an awareness of what others are doing are key to creating a safe environment. Examples include seating near playgrounds, courts, beaches and concession stands and overlooks at piers and ball fields. Vendors or shared public facilities located near entrances also create more traffic and visibility.

The strategic placement of trees and lighting can support a sense that the environment is safe and comfortable. Excessive trees and shrubs should not be planted in areas where visibility is needed. Vegetation should be pruned to appropriate heights and appropriately spaced next to facilities, paths, walkways, entranceways and parking spaces.

[photo- comparison photos of an open trail and one through the woods- caption ‘Trails do not have to be in wide open spaces to be considered safe’]

Lighting protects facilities and users; however, lighting in the absence of witnesses should never be equated with safety” (McKay, [date?](#)). Lighting should always reflect the intended hours of operation, i.e. lighting of playfields or structures in local parks when not in use may actually encourage criminal activities. Motion-sensing lights can perform the double duty of providing light when needed and letting trespassers know that they have been seen.

[Subsection of Principles of CPTED]

CEPTED Design Principle 3: Defined Ownership

Creating a sense of ownership maintains a safer outdoor site. Clearly delineated property boundaries are the most common form of defining ownership. Signage, logos, surface treatment, fencing and gateway treatments are other ways to express ownership. Buildings with front porches, flags, banners and flowers provide the same sense of security and ownership. However, ownership refers not only to the legal owner, but also to friends groups, adjacent property owners and interested citizens.

Ownership is expressed in part by management of the site. Spaces that receive appropriate and timely maintenance demonstrate the presence of an owner. Appropriate maintenance includes timely trash and graffiti removal, quick repairs of broken facilities, up to date painting, and regularly pruned vegetation. Efficient maintenance and management strategies often deter the occurrence of crime and vandalism.

[Subsection of Principles of CPTED]

CPTED Management Principle 1: Programming

Programming is the organizing and sponsoring of activities at a site. Thoughtful programming will increase the number of users, thus decreasing the opportunity for criminal activity. This is especially true for sites that have traditionally been vacant or abandoned.

Planned activities and programs attract legitimate users. Programs targeting specific groups like that scouts and school children encourage users to take ownership of the site. Education should be incorporated into site programming making citizens more confident with site use. The Trust for Public Land notes that safe parks and recreation centers topped the list for what teens want when school is not in session. It has also been found that after school programs for teens are a cost effective way to reduce many minor crimes of convenience.

[Subsection of Principles of CPTED]

CPTED Management Principle 2: Maintenance

Proper maintenance is essential for safe public spaces. Proper maintenance of a site, and especially the landscape, also supports accessibility, visual access and defined ownership. Clean well-maintained sites and trails create a sense of community ownership and pride as well as reduce criminal activity.

The inclusion of liability and security experts in the planning and management of a site also provides an extra assurance of security. Creating a strategic plan for crime prevention management and problem resolution will cultivate an anti-crime culture. The plan should include familiarizing crime prevention and emergency personnel with site layouts to facilitate quicker, more effective responses, and keeping up to date data on site crimes.

Research shows that “Clean and well-maintained [trail corridors] ... will reduce the incidents of minor crimes...” (Tracey & Morris, p. 10) In addition, if site problems are not repaired or maintained adequately and in a timely fashion, the sites are perceived as abandoned and quickly become a magnet for additional damage and miss uses. By performing regular security and safety assessments, immediate maintenance can be applied to reduce vandalism, graffiti, and invasive landscape maintenance.

Partnerships with business and community organizations promote an anti-crime culture and create safer outdoor environments. Crime watch groups composed of community volunteer organizations provide help, and contribute to the maintenance of the site, reducing litter and preventing vandalism (DGIF Crime Watch Program).

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Resources for CPTED

<http://www.vcpa.org/CPTED.htm>

<http://www.ci.seattle.wa.us/police/prevention/Tips/CPTED.htm>

Hopper, Leonard J. and Droge, Martha J. *Security and Site Design: A Landscape Architectural Approach to Analysis, Assessment, and Design Implementation*, John Wiley & Sons, Inc., 2005.

McKay, Tom. *What Makes a Park Safe?* Peel Regional Police,

<http://www.peelpolice.on.ca/contentPage.html?contextID=143>. 2006.

Tracey, Tammy and Morris, Hugh, *Rail-Trails and Safe Communities*, National Park Service and Rivers, Trails, and Conservation Assistance Program, 1998.

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Landowner Liability

Even though a public entity uses CPTED principles and practices, adjacent neighbors and other community members may feel that the development of a site for public use is not an acceptable action. Involving citizens into the planning and management process educates, incorporates ideas from the community and reduces apprehension about public use of lands. In some cases, public access to a site may involve private property and the concern for property owner liability needs to be addressed.

Private individuals often voluntarily offer trails or public access to water through their property. They may give an easement on a portion of their land or may allow access through an agreement with a governmental agency. In these instances, the landowner's liability is limited § 29.1-509 of the *Code of Virginia* (<http://leg1.state.va.us/000/lst/LS907188.HTM>).

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Virginia's Landowner Liability Legislation

- i. Liability can be a major concern for landowners who consider allowing public access to their property. However, the Commonwealth of Virginia

- does have a Landowner Liability Law, which protects landowners who agree to share access to their property with the public.
- ii. Localities are encouraged to enter into agreements with private landowners and recreation providers to enhance the quality and quantity of recreation programs and park spaces available to the public.
 - iii. Landowners providing public access on their properties can receive some relief from liability under Virginia law.
 - iv. Private land for public recreation: liability for private landowners

The Code of Virginia limits the liability of private landowners who allow others to use their property for recreational purposes. Also included is a provision that limits the liability of private landowners who enter into a lease agreement with agencies of the Commonwealth. In 1994, the code was amended to include easements for access to public parks, historic sites or other public recreation.

This legislation provides that “A landowner shall owe no duty of care to keep land or premises safe for entry or use by others...” for a variety of recreational uses. It limits landowner liability with the exception of “gross negligence or willful or malicious failure to guard or warn against a dangerous condition, use, structure or activity.” A landowner who receives a fee for the use of their property would not be exempt from liability, as outlined in the code.

The legislation also protects landowners whenever “... any person enters into a lease agreement with agencies of the Commonwealth concerning use of his land by the public” for a variety of recreational purposes. Local or regional agencies created for public park and recreation are also authorized to enter into lease arrangements to protect landowners.
[End textbox\]](#)

Health and Outdoor Recreation

Pull Quote

Boy, Gramp! Nature's so much bigger in person than it is on TV. –HANK KETCUM, Dennis the Menace, August 15, 2001

End Pull Quote`

Outdoor recreation promotes health and wellness by providing open space and natural areas for public access and by offering recreational programming that contributes to active lifestyles and vibrant communities. The significance of outdoor recreation in creating healthy lifestyles should not be underestimated. Health care costs are rising with the United States spending over 40 percent more than other countries on health care and only 2 percent of this annual health care cost being allocated for disease prevention. An increased investment in outdoor recreation contributes to preventive health care and lowers health costs.

Three quarters of Americans are not regularly active, and inactivity rates are increasing for many people. With exploding health-care costs and the prevalence of chronic disease, prevention programs are gaining more attention and surfacing in recreation programs across the nation. Americans are shifting from a medical model to a more holistic model of health, which emphasizes promotion and prevention. With increasing evidence demonstrating the connection between wellness and the use of park and recreation services, local providers are compelled to expand their range of services.

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The following are excerpts from US Senate Bill 2558, introduced on June 22, 2004 by Mr. Harkin, was read twice and referred to the Committee on Finance.

A Bill to improve the health of Americans and reduce health care costs by reorienting the Nation's health care system towards prevention, wellness and self care.

- The U.S. spends 40 percent more than any other country on health care as a proportion of our gross domestic product, 75 percent of which is spent on the treatment of chronic disease. Only 2 percent goes toward the prevention of chronic disease.
- Almost 40 percent of Americans are sedentary. More than a third of young people in grades 9 through 12 do not regularly engage in vigorous-intensity physical activity.
- Physical and mental health care interconnected. Physical conditions often result in mental health complications; likewise, depression can manifest itself through physical symptoms.
- Major depression is the leading cause of disability in the United States.

- Evidence shows that health promotion programs with exercise, nutrition and wellness components targeting people with disabilities can significantly reduce the incidence of these conditions and lead to healthy outcomes.

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The increase in sedentary activity and the related growth in chronic disease emerged as issues in many public meetings during the development of the Virginia Outdoors Plan. With an adult obesity rate of 23.3 percent, Virginia ranks 25th heaviest in the nation, according to the Trust for America's Health (TFAH). Virginia ranks 28th in the nation for adult diabetes levels (7 percent), and 22nd for rates of hypertension (25.7 percent). The South has nine of the 10 states with the highest rates of obesity, diabetes and hypertension, according to the TFAH 2006 report.

Children today are likely to be the first generation that has not outlived their parents, with the rise in obesity levels projected to reverse life expectancy gains by at least two to five years, according to the New England Journal of Medicine. Childhood obesity rates have more than tripled from 1980 to 2004, from 5 to 17 percent, an epidemic that will place a long-term health burden and associated financial costs on the American taxpayer. Outdoor recreation must be available, modeled and encouraged in order for young people to participate and reap the health-related benefits. Concerned parents, teachers, health providers and many others would like to see government step in and offer more prevention in the form of outdoor recreation facilities and programs close to home.

With many Americans working longer hours today than ever before, there is less opportunity for parents to encourage children to participate in outdoor recreation. A built environment that allows people to work physical activity into their daily routine has not only become a desired amenity, it has become an essential component of modern life.

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The research clearly shows that having access to places to get active is one of the most important factors linked to whether people will be active. Studies have revealed that parks and trails are positively associated with physical activity—the closer people live to a park or trail, the stronger the effect. In fact, a systematic review of studies performed by the Centers for Disease Control and Prevention found that increased access to places to be active can boost the number of people getting enough exercise at least three days a week by 25 percent.

Research shows that proximity is the most important element of creating accessible parks. A large number of smaller neighborhood parks may be more effective at encouraging active living than building large sporting complexes on the edge of communities.

Parks and Health: How Parks and Recreation Contribute to a Healthy Lifestyle.

National Recreation and Park Association (NRPA)

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The NRPA report also discussed the findings of a recent survey by the International City/County Management Association that 89 percent of city managers think parks and recreation departments should take a leading role in developing a community conducive to active living. Because this is a new role for recreation providers, few departments have developed the operational capacity to contemplate neighborhood-scale community development. Leadership at all levels of government will be required to address the challenge of this service gap.

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Municipal Recreation and Parks

- Park and recreation agencies must undergo a re-positioning as part of the health services sector of government.
- Parks and recreation personnel must, in many cases, undergo a paradigm shift in their own conceptualization of their mission.
- Specific programs targeted to maintaining or improving health need to be developed and promoted.
- Practical research needs to be undertaken to demonstrate the health consequences of participation.

Parks, Recreation and Public Health: The benefits are endless.

By Ching-Hua Ho, Laura Payne, Ph.D., Elizabeth Orsega-Smith, Ph.D., Geoffrey Godbey, Ph.D.

End Text Box]

Although the state does not have a specific program area developed to address health and outdoor recreation, findings and recommendations related to health and outdoor recreation are discussed in depth in existing program areas outlined in the Virginia Outdoors Plan.

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Selected References

108 Congress, Second Session, Senate Bill 2558, introduced by Mr. Harkin on June 22, 2004, referred to the Committee on Finance.

Municipal Recreation and Parks. Parks & Recreation--Research Update from April 03
Parks, Recreation and Public Health: The Benefits are Endless. Ching-Hua Ho, Laura Payne, Ph.D., Elizabeth Orsega-Smith, Ph.D., Geoffrey Godbey, Ph.D.

National Recreation and Parks Association and Barbara McCann. *Parks and Health: How Public Parks and Recreation Contribute to a Healthy Lifestyle.*

The New York Times. [Children's Life Expectancy Being Cut Short by Obesity](#), by Pam Belluck, March 17, 2005.

Trust for America's Health. *F as in Fat: How Obesity Policies are Failing America*, August 2006, Jeffrey Levi, PhD, Laura M. Segal, MA, Chrissie Juliano, MPP

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The Impact of Climate Change on Recreation

Climate change is impacting recreation, particularly in U.S. coastal areas where sea level is rising more rapidly than worldwide. Studies by the EPA and others have estimated that along the Gulf and Atlantic coasts, a one-foot rise in sea level is likely by 2050.

Wetlands, which will be squeezed between coastal development and the rising sea, are also at risk.

The Environmental Protection Agency reports that by 2100, Virginia could increase by 3°F in winter, spring, and summer (with a range of 1-6°F), and 4°F in fall (with a range of 2-8°F). Precipitation is estimated to increase by 20% in all seasons (with a range of 10-30%). Other climate models may show different results; more recent studies have suggested that the warming is likely to occur more rapidly over land than the open seas.

The International Panel on Climate Change expects the impacts of climate change on tourism and recreation to be centered on:

- The length of operating seasons
 - Extended seasons for warm weather activities may reap economic benefits at the expense of natural resources, mandating a “closed” season for overused areas
 - Negative impacts on winter recreation, requiring adaptations like snowmaking or diversification of activities to generate year-round income and employment
- The availability and quality of the resource base as recreation-dependent ecosystems are modified (shifts in vegetation and wildlife)
- The impacts from changes in the magnitude and frequency of extreme events (hurricanes, avalanches, fires and floods)
- The loss of structures, beaches and wetlands from sea level rise
- Resource competition with declining resource availability and quality
- The increasing cost of travel due to greenhouse gas reduction policies

The distribution of fish species, an increase in summer stratification of water with more frequent and larger “dead zones,” a loss of winter ice, possible increases in risk of insect and waterborne diseases, an increase in the accumulation of contaminants in fish, a loss of bird diversity, and degradation of winter recreation experience resulting from climate change may effect recreation and tourism. The potential impacts of climate change on outdoor recreation and tourism in the state of Virginia have not been evaluated (http://www.ucsusa.org/greatlakes/glregionnew_rec.html, October, 2006).